

Prior Art Rejections

The Examiner rejected claims 1-5 and 7-9 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,075,297 to Ingraham et al. The Examiner alleged that Ingraham et al. teaches an isolated thermal interface comprising a flexible (resilient) graphite sheet including particles of graphite and having two major surfaces, at least one surface coated with a protective coating that would have inhibited flaking of the particles of graphite. The Examiner states that Ingraham et al. does not explicitly teach that the flexible graphite sheet comprises natural graphite.

However, the Examiner opined that it would have been obvious to one of ordinary skill in the art to use a known material, such as GRAFOIL®. In referring to the composition of GRAFOIL and its uses, the Examiner cites to U.S. Patent 3,404,061 to Shane et al.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.

From the action, it is inferred that the Examiner derives his motivation to modify the graphite-epoxy composite of Ingraham et al. to include particles of natural graphite from Shane et al. Applicants respectfully state that the motivation to modify Ingraham et al. is improper because one of ordinary skill of the art would not have the required motivation to modify Ingraham et al. as suggested by the Examiner in light of the complete teachings of Ingraham et al. and Shane et al.

It making the modification, the Examiner equates the word flexible to resilient based on the following passage of Ingraham et al:

"The resilience of the graphite/ fiber composite matrix material provides significant damping of vibrations which may reach the chips"

Column 6, lines 16-18 of Ingraham et al.

Resilience as used in Ingraham et al. as cited above would mean to one of ordinary skill in the art that the composite would be able to protect the chip from damage by vibrational forces and then the composite returns to its form prior to application of such forces. *See* attached definition of resilience incorporated herein by reference.

Shane et al. teaches that the expanded natural graphite particles of the flexible graphite sheet are not resilient. At column 9, lines 46-51, Shane et al teaches that a **very important characteristic** of the expanded graphite particles that make up a sheet of flexible graphite is that the particles in masses can be compressed under load and will maintain the compression set. (Emphasis added by Applicants.) This teaches a person of ordinary skill in the art that the material used to form the flexible graphite sheet of Shane et al. is not resilient. Unlike the material of Ingraham et al., Shane et al. indicates that the material of Shane et al. will not return to its original shape after the force is no longer applied to the material.

In light of the facts that an intended purpose of Ingraham et al. is to function as a conductive lamina that has sufficient resilience and rigidity to protect a semiconductor ship from damage caused by vibrational forces and that the modification put forth by the Examiner is to include a material in the lamina that is not resilient, the rejection lacks the mandated motivation to combine or modify because the modification would render the material of the Ingraham et al. reference unsatisfactory for its intended purpose of being an resilient conductive lamina in accordance with MPEP § 2143.01. Thus Applicants request that the Examiner withdraw the rejection to claim 1 for at least the reason that the proposed modification by the Examiner is improper due to the absence of the required motivation.

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The Examiner rejected claims 10-20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,075,297 to Ingraham et al. in view of U.S. Patent 5,834,337 to Unger et al.

The above comments regarding Ingraham et al. and Shane et al. are incorporated herein by reference as if fully rewritten. Unger et al. does not teach, suggest, or disclose that the graphite article of Unger et al. may comprise compressed expanded natural graphite particles. In light of the above comments regarding Ingraham et al., Shane et al., and Unger et al. and the amendment to claim 10, claim 10 is patentable over the cited art because there is no permissible combination of the aforementioned references which teaches, suggests, or discloses each and every element of claim 10.

In light of the above amendment and remarks, Applicants request that the Examiner withdraw the rejection of claims 1 and 10 based on the references.

No fee is believed to be due with the filing of this response with regard to an extension of time. If there are any additional fees due in connection with the filing of this response, including any fees required for an additional extension of time under 37 C.F.R. 1.136, such an extension is requested and the Commissioner is authorized to charge or credit any overpayment to Deposit Account No. 50-1202.

For the reasons set forth above, Applicants believe that the claims are patentable over the references cited and applied by the Examiner and a prompt and favorable action is solicited. The applicants believe that these claims are in condition for allowance, however, if the Examiner disagrees, the applicants respectfully request that the Examiner telephone the undersigned.

Respectfully submitted,
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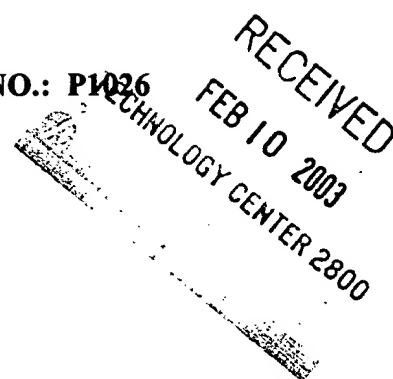
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Marked Up Version Showing the Changes



In the Claims

3. (amended) The thermal interface of claim 2 wherein the thermoplastic ~~thermal plastic~~ comprises polyethylene, a polyester or a polyimide.

10. (twice amended) A process for producing a thermal interface having protective coating sufficient to inhibit flaking of the particles of graphite, the process comprising (a) forming a flexible graphite sheet, said sheet comprising compressed expanded natural graphite particles, into the size and shape desired for a thermal interface, wherein the formed flexible graphite sheet has at least one major surface and at least one edge surface, and wherein the sheet has its directions of greater thermal conductivity parallel to the major surface; and (b) coating the formed flexible graphite sheet with a material to form a protective coating, such that the material forms a protective boundary about the flexible graphite sheet.